

**WEST****End of Result Set**

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L1: Entry 1 of 1

File: DWPI

Mar 16, 2000

DERWENT-ACC-NO: 2000-283086

DERWENT-WEEK: 200307

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TITLE: Impact resistant polyurethane for e.g. architectural and vehicle glazing, aircraft canopies or riot shields is prepared from cycloaliphatic diisocyanates and aromatic diamine curing agents

INVENTOR: SLAGEL, E C

PATENT-ASSIGNEE:

ASSIGNEE

SIMULA INC

CODE

SIMUN

PRIORITY-DATA: 1998US-0145658 (September 2, 1998), 1995US-0382562 (February 2, 1995), 1996US-0595262 (February 1, 1996)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 200014137 A1	March 16, 2000	E	031	C08G018/02
AU 9895144 A	March 27, 2000		000	C08G018/02
US 6127505 A	October 3, 2000		000	C08G018/02
NO 200101064 A	April 23, 2001		000	C08G000/00
EP 1137684 A1	October 4, 2001	E	000	C08G018/02
CN 1314922 A	September 26, 2001		000	C08G018/02
KR 2001074892 A	August 9, 2001		000	C08G018/02
JP 2002524591 W	August 6, 2002		027	C08G018/75

DESIGNATED-STATES: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW AT BE DE ES FR GB IE IT NL SE

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
WO 200014137A1	October 7, 1998	1998WO-US21250	
AU 9895144A	October 7, 1998	1998AU-0095144	
AU 9895144A		WO 200014137	Based on
US 6127505A	February 2, 1995	1995US-0382562	CIP of
US 6127505A	February 1, 1996	1996US-0595262	CIP of
US 6127505A	September 2, 1998	1998US-0145658	
US 6127505A		US 5962617	CIP of
NO 200101064A	October 7, 1998	1998WO-US21250	
NO 200101064A	March 1, 2001	2001NO-0001064	
EP 1137684A1	October 7, 1998	1998EP-0948609	
EP 1137684A1	October 7, 1998	1998WO-US21250	
EP 1137684A1		WO 200014137	Based on
CN 1314922A	October 7, 1998	1998CN-0814299	
KR2001074892A	February 28, 2001	2001KR-0702669	
JP2002524591W	October 7, 1998	1998WO-US21250	
JP2002524591W	October 7, 1998	2000JP-0568891	
JP2002524591W		WO 200014137	Based on

INT-CL (IPC): C08 G 0/00; C08 G 18/02; C08 G 18/10; C08 G 18/32; C08 G 18/75

RELATED-ACC-NO: 1996-371384

ABSTRACTED-PUB-NO: US 6127505A  
BASIC-ABSTRACT:

NOVELTY - An impact resistant polyurethane material is prepared by first producing a prepolymer by reacting one or more polyester, polycaprolactone, polyether and/or polycarbonate glycols with a cycloaliphatic diisocyanate in a ratio of about 2.5-4 for each OH. The prepolymer is then reacted with an aromatic diamine curing agent such as diethyltoluene diamine in a ratio of about 0.85-1.02.

DETAILED DESCRIPTION - A transparent, high hardness, impact resistant polyurethane material is prepared by first producing a prepolymer by reacting at least one OH-containing intermediate such as polyester, polycaprolactone, polyether and/or polycarbonate glycols having an average molecular weight of about 400-2000 with a cycloaliphatic diisocyanate in an equivalent ratio of about 2.5-4 NCO per 1 OH. The prepolymer is then reacted with an aromatic diamine curing agent such as 2,4-diamino-3,5-diethyl-toluene and/or 2,6-diamino-3,5-diethyl-toluene in an equivalent ratio of about 0.85-1.02 NH<sub>2</sub> per 1 NCO.

USE - For transparency applications such as architectural glazings, vehicle glazings, riot shields, aircraft canopies, face masks, visors, ophthalmic and sun lenses, protective eyewear and transparent armor.

ADVANTAGE - The polyurethane provides exceptionally high heat distortion temperatures and excellent chemical resistance, ballistic properties and optical clarity.  
ABSTRACTED-PUB-NO:

WO 200014137A  
EQUIVALENT-ABSTRACTS:

NOVELTY - An impact resistant polyurethane material is prepared by first producing a prepolymer by reacting one or more polyester, polycaprolactone, polyether and/or polycarbonate glycols with a cycloaliphatic diisocyanate in a ratio of about 2.5-4 for each OH. The prepolymer is then reacted with an aromatic diamine curing agent such as diethyltoluene diamine in a ratio of about 0.85-1.02.

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CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: IMPACT RESISTANCE POLYURETHANE ARCHITECTURE VEHICLE GLAZE AIRCRAFT CANOPY  
RIOT SHIELD PREPARATION CYCLOALIPHATIC AROMATIC CURE AGENT

DERWENT-CLASS: A25 A89 A93 A95 A96 E19

CPI-CODES: A05-G01A; A05-J04; A09-A01A; A09-A02; A09-A05A; A10-D; E10-B01A4;

CHEMICAL-CODES:

Chemical Indexing M3 \*01\*

Fragmentation Code

G018 G100 H1 H101 H142 M210 M211 M212 M240 M283

M320 M414 M510 M520 M531 M540 M781 M782 M904 M905

Q132 R038

Specific Compounds

22412K 22412M 22412U

Chemical Indexing M3 \*02\*

Fragmentation Code

G018 G100 H1 H101 H142 M210 M211 M212 M240 M283

M320 M414 M510 M520 M531 M540 M781 M782 M904 M905

Q132 R038

Specific Compounds

A00FYK A00FYM A00FYU

Chemical Indexing M3 \*03\*

Fragmentation Code

G017 G018 G019 G100 H1 H101 H142 H602 H608 H641

H642 M1 M121 M132 M150 M210 M211 M212 M213 M231

M232 M240 M283 M311 M321 M342 M414 M510 M520 M532

M540 M781 M782 M904 M905 Q132 R038

Markush Compounds

200015-69301-K 200015-69301-M 200015-69301-U

ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1] 018 ; G1934 G1854 G1843 D01 F73 D11 D10 D14 D13 D31 D76 D50 D91 ;  
R17132 G1854 G1843 D01 D11 D10 D14 D13 D32 D50 D76 D93 F73 ; R00895 G1592 D01 D23 D22  
D31 D42 D50 D75 D84 F34 ; G1934 G1854 G1843 D01 F73 D11 D10 D19 D18 D31 D76 D50 D93 ;  
G1069 G1025 G0997 D01 F28 F26 D11 D10 D50 D90 ; R01060 G1343 G1310 G4024 D01 D11 D10  
D50 D60 D86 F37 F35 E00 E13 ; R01295 G2131 D01 D23 D22 D31 D42 D50 D77 D86 F43 ; R00908  
G1036 G1025 G0997 D01 D11 D10 D50 D84 F28 F26 ; R01422 G1047 G1025 G0997 D01 D11 D10  
D50 D86 F28 F26 ; R01075 G1025 G0997 D01 D11 D10 D50 D85 F28 F26 ; P0964\*R F34 D01 ;  
P0839\*R F41 D01 D63 ; P1592\*R F77 D01 ; P0055 ; P0862 P0839 F41 F44 D01 D63 ; H0260 ; S9999  
S1581 ; M9999 M2073 ; L9999 L2391 ; L9999 L2073 ; L9999 L2528 L2506 ; L9999 L2824 ; ND04  
Polymer Index [1.2] 018 ; B9999 B4159 B4091 B3838 B3747 ; Q9999 Q9234 Q9212 ; Q9999 Q9289  
Q9212 ; Q9999 Q7658 ; B9999 B4397 B4240 ; B9999 B5594 B5572 ; K9847\*R K9790 ; B9999

B5243\*R B4740 ; B9999 B3861 B3849 B3838 B3747 ; B9999 B3850 B3849 B3838 B3747 ; Q9999  
Q9223 Q9212 ; Q9999 Q6779 ; Q9999 Q9029 ; Q9999 Q7090 Q7056 ; Q9999 Q8286\*R Q8264 ;  
Q9999 Q8300 Q8286 Q8264 ; B9999 B4397 B4240 ; K9847\*R K9790 ; B9999 B4580 B4568 ; B9999  
B4397 B4240 ; B9999 B4295 B4240 Polymer Index [1.3] 018 ; D01 D11 D10 D19 D18 D32 D76 D50  
D69 D94 D95 D93 F09 F07 C1 7A ; A999 A157\*R Polymer Index [1.4] 018 ; G2540\*R D01 D22 D45  
D77 F11 N\* 5A ; A999 A544 A486 ; K9869 K9847 K9790 Polymer Index [1.5] 018 ; D01 F07\*R ;  
A999 A544 A486 Polymer Index [1.6] 018 ; D01 F30\*R ; R00420 G1070 G0997 D01 D11 D10 D50  
D86 F29 F26 ; A999 A497 A486 ; A999 A771 Polymer Index [1.7] 018 ; D01 D11 D10 D50 D91 F29  
F26 ; A999 A497 A486 ; A999 A771

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C2000-085367

**WEST****End of Result Set**☐ **Generate Collection** **Print**

L8: Entry 1 of 1

File: USPT

Oct 3, 2000

DOCUMENT-IDENTIFIER: US 6127505 A  
TITLE: Impact resistant polyurethane and method of manufacture thereof

US PATENT NO. (1):  
6127505

**Brief Summary Text (50):**

A triol may be added to the prepolymer in an amount sufficient to produce about one percent cross-linking based upon equivalents of reactants, for example 4 to 8% by weight based on total reactants. Triols that are useful in the present invention include trimethylol ethane and trimethylol propane. The addition of a triol to the prepolymer increases the heat distortion temperature and in some cases improves the ballastic properties of the cured polyurethane.

**CLAIMS:**

18. The polyurethane material of claim 1, wherein the prepolymer further comprises a triol in an amount sufficient to produce 1% cross-linking based upon equivalents of reactants.

19. The polyurethane material of claim 18, wherein the triol is selected from the group consisting of trimethylol ethane, trimethylol propane, and mixtures thereof.

36. The polyurethane material of claim 23, wherein the prepolymer further comprises a triol in an amount sufficient to produce 1% cross-linking based upon equivalents of reactants.

37. The polyurethane material of claim 36, wherein the triol is selected from the group consisting of trimethylol ethane, trimethylol propane, and mixtures thereof.